

CLAIMS

We claim:

1 1. A method of constructing a model for estimating electrical
2 characteristics for an extraction sub problem, said method comprising:
3 identifying a set of physical measurements that define said extraction sub
4 problem;
5 selecting a set of training cases for said specific extraction sub problem, each of
6 said training cases including an associated set of said physical measurements;
7 solving said specific extraction sub problem for each of said training cases using
8 said associated set of physical measurements as an input to an accurate physics
9 based model to generate an associated output; and
10 training a machine-learning model with Bayesian inference implemented with a
11 Hybrid Monte Carlo method, said training using said associated set of physical
12 measurements and associated outputs as training data.

1 2. The method as claimed in claim 1 wherein said electrical
2 characteristic comprises capacitance.

1 3. The method as claimed in claim 1 wherein said electrical
2 characteristic comprises resistance.

1 4. The method as claimed in claim 1 wherein said extraction sub
2 problem comprises a section of interconnect wire and nearby interconnect wiring within a
3 define halo.

1 5. The method as claimed in claim 1 wherein said extraction sub
2 problem comprises a section of interconnect wiring.

1 6. The method as claimed in claim 1 wherein one of said set of
2 physical parameters comprises a spacing between a pair of interconnect lines.

1 7. The method as claimed in claim 1 wherein one of said set of
2 physical parameters comprises a wire width.

1 8. The method as claimed in claim 1 wherein one of said set of
2 physical parameters comprises a wire length.

1 9. The method as claimed in claim 1 wherein selecting a set of
2 training cases comprises randomly generating input parameters with a gamma probability
3 distribution.

1 10. The method as claimed in claim 1 wherein said electrical
2 characteristic comprises delay.

1 11. The method as claimed in claim 1 wherein said machine-learning
2 model comprises a neural network.

ABSTRACT OF THE DISCLOSURE